Service Manual

74 PM32/01B/02B/05B/07B

Stereo amplifier

This service manual explains them by extracting the different specifications from those of the model PM-32, based on the model PM-30. For both electrical and mechanical information on the after-sales service which is not stated, all information is described in the model PM-30 service manual (Code-number is 4822 725 50912). The dispatch of the parts for after-sales service has to be referred to this service manual, with first priority.
For this reason, please use this service manual with referring the model PM-30 service manual, without fail.

marantz®

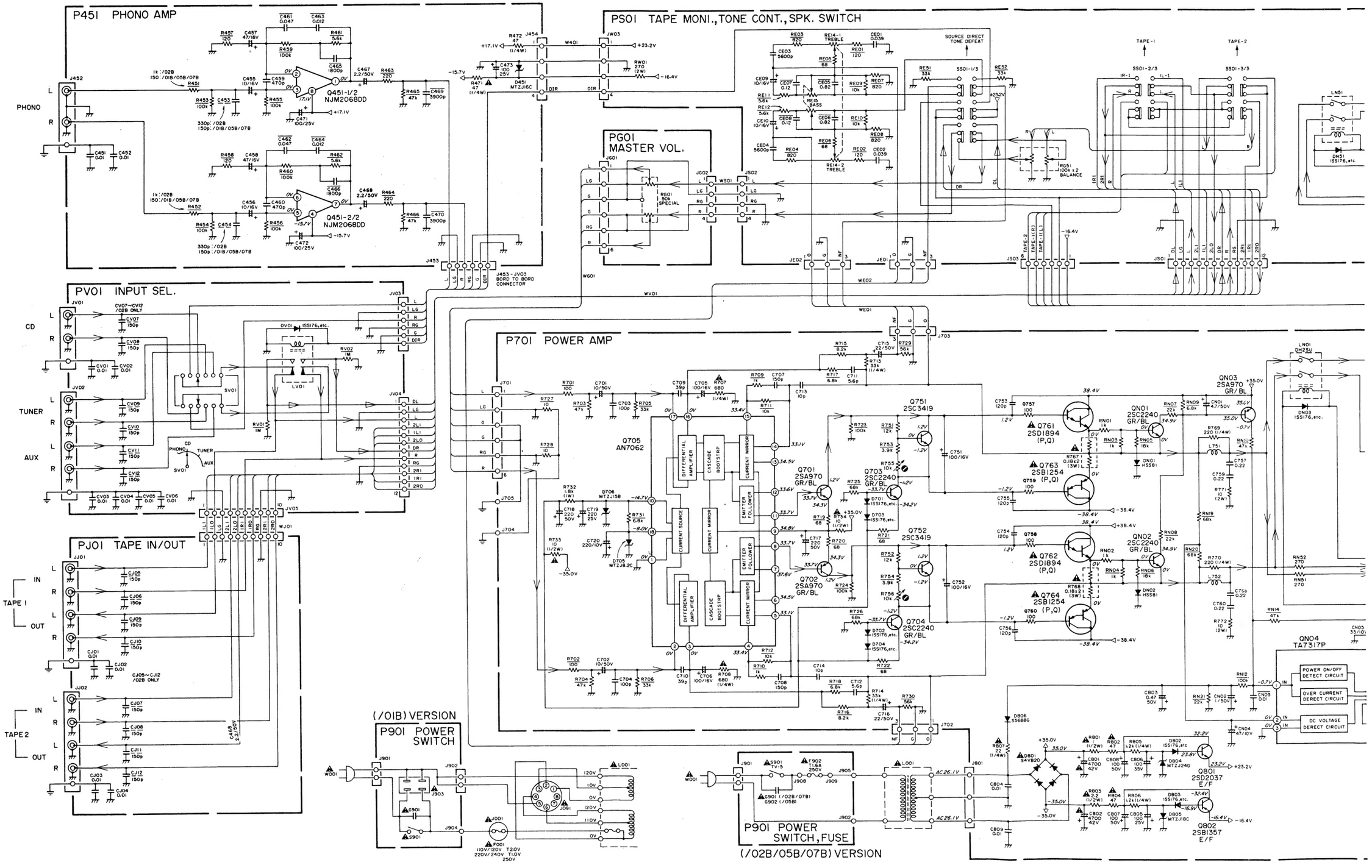
model PM-32

First issue: 1992
4822 725 50997

Different Parts between model PM-30 and PM-32

PAGE	REF. DESIG.	PM-30	PM-32	DESCRIPTION
14	001B	4822 425 40176	4822 425 40184	Front Panel Assembly
	013B	4822 410 60395	4822 410 60902	Button, Power
	001F	4822 466 92914	–	
	005G	4822 462 41477	4822 462 41932	Leg
	001T	4822 736 20695	4822 736 21419	User Manual
	▲ L001	4822 146 21554	4822 146 21671	Power Transformer /02B
	C703	4822 121 51517	4822 121 50562	Film 100pF ±5%
	C704	4822 121 51517	4822 121 50562	Film 100pF ±5%
16	CW03	–	4822 122 32486	Ceramic 0.01μF +80% –20%
	LV01	4822 280 20195	4822 280 20501	Relay, MR62-24SR
17	RY06	4822 111 50474	4822 053 10331	Resistor 330Ω ±5% 1W
	C467	4822 124 90358	4822 124 90357	Elect 2.2μF 50V
	C468	4822 124 90358	4822 124 90357	Elect 2.2μF 50V
	R472	4822 111 30006	4822 052 10499	Resistor 47Ω ±5% 1/4W
	C701	4822 124 22571	4822 124 23082	Elect 10μF 50V
	C702	4822 124 22571	4822 124 23082	Elect 10μF 50V
	C707	4822 121 51037	4822 121 50416	Film 150pF ±5%
	C708	4822 121 51037	4822 121 50416	Film 150pF ±5%
18	C753			
	≀	4822 121 43126	4822 121 50548	Film 120pF ±5%
	C756			
	RN01	4822 111 91257	4822 052 10102	Resistor 1KΩ ±5% 1/6W
	RN02	4822 111 91257	4822 052 10102	Resistor 1KΩ ±5% 1/6W
	R713	4822 273 10214	4822 050 23303	Resistor 33KΩ ±5% 1/4W
	R714	4822 273 10214	4822 050 23303	Resistor 33KΩ ±5% 1/4W
	R732	4822 116 60343	4822 053 10182	Resistor 1.8KΩ ±5% 1W
	R755	4822 100 11373	4822 100 11351	10KΩ, Trimming
	R756	4822 100 11373	4822 100 11351	10KΩ, Trimming
	R757	4822 111 91285	–	
	R758	4822 111 91285	–	
	R759	4822 111 91285	–	
	R760	4822 111 91285	–	
	R763	4822 116 60267	–	
	R764	4822 116 60267	–	
	R765	4822 111 91424	–	
	R766	4822 111 91424	–	
	R769	4822 116 52849	4822 050 22201	Resistor 220Ω ±5% 1/4W
	R770	4822 116 52849	4822 050 22201	Resistor 220Ω ±5% 1/4W
	R771	4822 111 90726	4822 053 11109	Resistor 10Ω ±5% 2W
	R772	4822 111 90726	4822 053 11109	Resistor 10Ω ±5% 2W
	R773	4822 111 91424	–	
	R774	4822 111 91424	–	

SCHEMATIC DIAGRAM



NOTE ON SAFETY :
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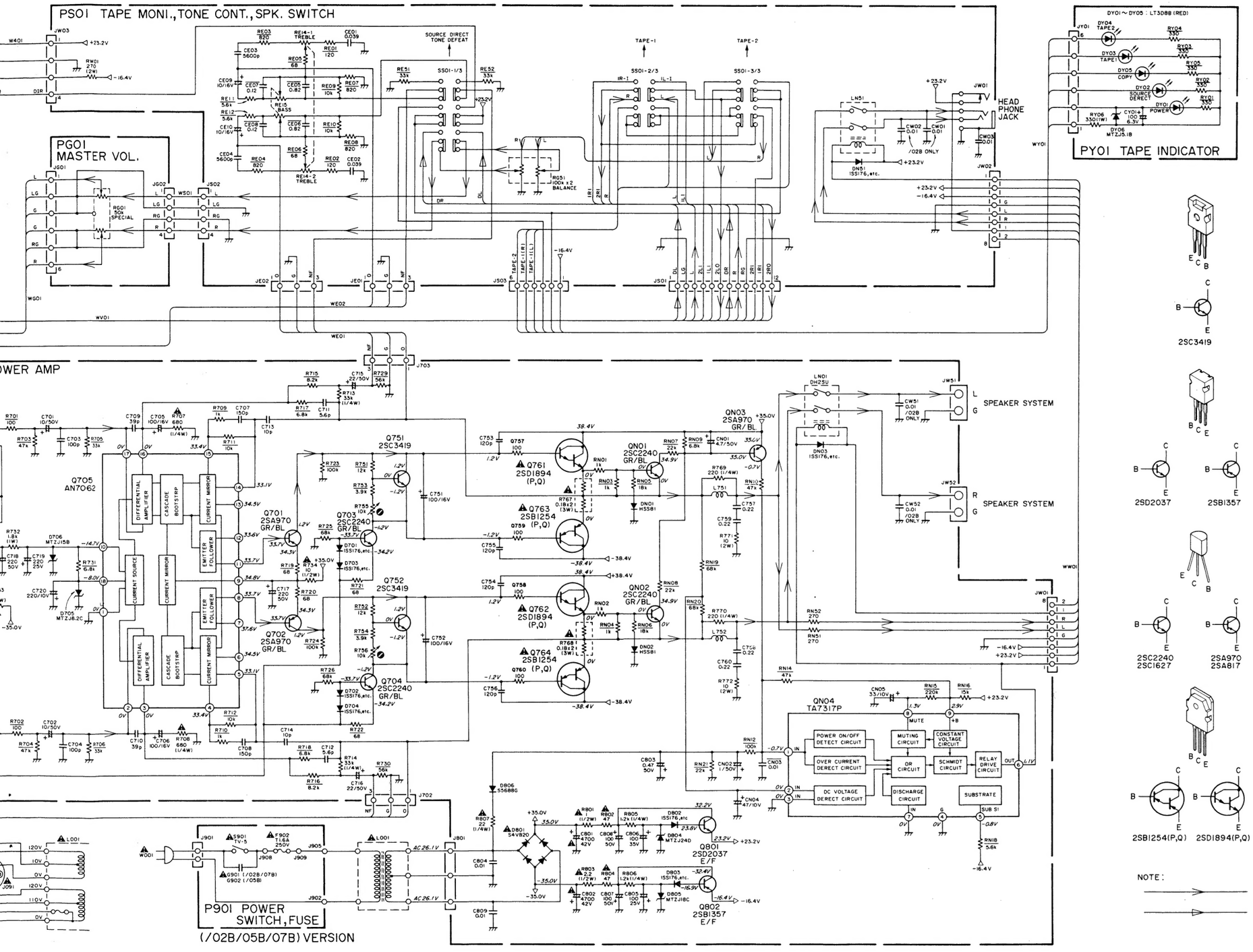

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PAGE	REF. DESIG.	PM-30	PM-32	DESCRIPTION
18	Q751	4822 130 60526	4822 130 60117	Transistor 2SC3419Y
	Q752	4822 130 60526	4822 130 60117	Transistor 2SC3419Y
	Q757	4822 130 60696	4822 052 10101	Resistor 100Ω ±5% 1/6W
	Q758	4822 130 60696	4822 052 10101	Resistor 100Ω ±5% 1/6W
	Q759	4822 130 69693	4822 052 10101	Resistor 100Ω ±5% 1/6W
19	Q760	4822 130 69693	4822 052 10101	Resistor 100Ω ±5% 1/6W
	▲Q761	4822 130 60697	4822 130 63044	Transistor 2SD1894(P, Q)
	▲Q762	4822 130 60697	4822 130 63044	Transistor 2SD1894(P, Q)
	▲Q763	4822 130 60694	4822 130 63043	Transistor 2SB1254(P, Q)
	▲Q764	4822 130 60694	4822 130 63043	Transistor 2SB1254(P, Q)
	JW52	4822 290 81373	4822 290 81374	Terminal, Speaker Black-Red
	L761	4822 157 51739	4822 157 63085	Coil, Speaker
	L762	4822 157 51739	4822 157 63085	Coil, Speaker

IDLING CURRENT ADJUSTMENT

(1) Before switching the power ON, set the Master Volume control to the minimum position and the Balance and Tone controls to the center positions. Also set semi-fixed resistors R755 (L CH) and R756 (R CH) on PCB P701 to the center positions.
(2) Each of the cement resistors R767 (L CH) and R768 (R CH) on the PCB P701 is provided with three test points. Connect a digital voltmeter, set for the DC voltage input, to the test points at the two extremities of the three test points of R767 or R768.
(3) After the setup above, switch the power ON and adjust semi-fixed resistor R755 (L CH) or R756 (R CH) on PCB P701 according to the digital voltmeter reading. The target setting value is 7.2mV (20mA) for both the L CH and R CH.

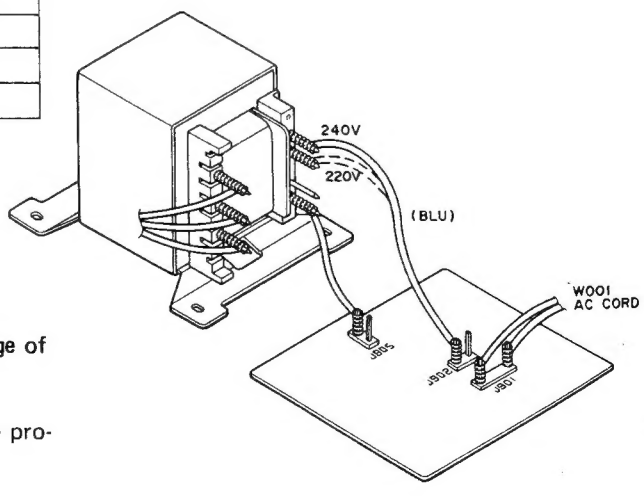
Please refer to the table below.

Elapsed time after power ON	Idling current setting value
30 sec. – 1 min.	7.4mV
1 min. – 2 min.	7.2mV
2 min. – 4 min.	7.2mV
More than 4 min.	7.2mV

HOW TO CHANGE THE SUPPLY VOLTAGE (/05B/07B Versions)

With the /05B/07B Versions, the rated supply voltage of 240V can be changed to 220V.

Refer to the right-hand diagram for the voltage change procedure.

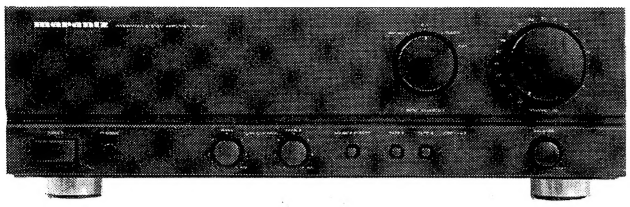


MARA-00542

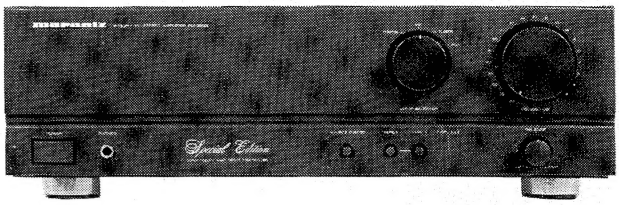
Service Manual

74 PM30/01B/02B/05B/07B 10B/12B/15B/17B

Stereo amplifier



PM-30



PM-30SE

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marantz®

model PM-30/PM-30SE

First issue: 1990

4822 725 50912

MARANTZ DESIGN AND SERVICE

Using superior design and selected high grade components, MARANTZ company has created the ultimate in stereo sound.
Only **original MARANTZ parts** can insure that your MARANTZ product will continue to perform to the specifications for which it is famous.

Parts for your MARANTZ equipment are generally available to our National Marantz Subsidiary or Agent.

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Vestdijk 9
5600 MD Eindhoven
The Netherlands
Phone: +31/40.758290
Telefax: +31/40.75.82.99
Telex: 35000 PHTC NL routing IND NLMTFAT

ORDERING PARTS:

Parts can be ordered either by mail or by telex. In both cases, correct part number has to be specified.
The following information must be supplied to eliminate delays in processing your order:

1. Complete address
2. Complete part numbers and quantities required
3. Description of parts
4. Model number for which part is required
5. Way of shipment
6. Signature: any order form or telex must be signed otherwise such part order will be considered as null and void.

PARTS ORDERING

Parts may be ordered at the following addresses:

AUSTRIA
HORNYPHON
Vertriebsgesellschaft GmbH
Wienerbergstrasse 1
A 1101 Wien
Austria
Telex: 132.332

BELGIUM
SVD DIVISION MARANTZ
Industrialaan 1
1720 Groot-Bijgaarden
Belgium
Telex: 24466

CHILE
MARANTZ
DIVISION OF PHILIPS S.A.
AV. Santa Maria, 0760
Casilla 2687
Santiago
Telex: 240.239

DENMARK
MARANTZ
DIVISION OF PHILIPS
SERVICE A/S
Prags Boulevard 80
Postbox 1919
DK-2300 København S
Denmark
Telex: 31201

FINLAND
MARANTZ
DIVISION OF OY PHILIPS Ab
Kaivokatu 8
00100 Helsinki
Finland
Telex: 124811

FRANCE
MARANTZ FRANCE
4 Rue Bernard Palissy
92600 Asnières
France
Telex: 611651

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Alexanderstrasse 1
2000 Hamburg
Germany

THE NETHERLANDS
Elpro Marantz
Wint Hontlaan 28
3526 KV Utrecht
The Netherlands
Telex: 4748

NORWAY
MARANTZ
DIVISION OF PHILIPS A/S
Sandstuveien 40
0680 Oslo 6
Norway
Telex: 72640

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MARANTZ AUDIO U.K. Ltd
Unit 15/16
Saxon Way Industrial Estate
Moor Lane
Harmondsworth UB7 OLW
Great Britain
Telex: 935196

GREECE
SHERTON ELECTRONICS S.A.
P.O.Box 21025
Hippocratus Street 188
Athens 11471
Greece
Telex: 216.795

JAPAN
MARANTZ JAPAN, Inc.
35-1, 7-chome, Sagamiono
Sagamihara-shi, Kanagawa
Japan

KUWAIT
AL ALAMIAH ELECTRONICS
Ussama Building
Fahd al Saleem Street
P.O.Box 23781
Safat-Kuwait
Telex: 22694

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Via Chiese, 74
20126 Milano
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University Street
Riyadh 11432
Saudi Arabia
Telex: 401530

SOUTH AFRICA
MARANTZ
DIVISION OF PHILIPS S.A.
Main Road Martindale
P.O. Box. 58088
Newville 21114
South Africa

SPAIN
PHONO S.A.
Ignacio Iglesias 10
Badalona (Barcelona)
Spain
Telex: 59355

SWEDEN
MARANTZ
DIVISION OF PHILIPS
Försäljning AB
Tegeluddsvägen 1
S-115 84 Stockholm
Sweden
Telex: 14060

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Technischer Service
Duenstrasse 3
3186 Düdingen
Switzerland

TURKEY
DOGRUOL Ltd.
I.M.C.
6 Blok N°6310
Unkapani
Istanbul
Turkey
Telex: 22085

MALTA
CACHIA & GALEA
Republic Street, 68D
Valetta
Telex: 1682

PORTUGAL
MARANTZ
Divisao philips S.A. service
Outurela-carnaxide
2795 LinDA-A-VELHA
Telex: 43906

All of the above locations are fully equipped to take care of your total service needs. Because various countries have differing configuration requirements, it is necessary that you contact the service facility in your particular country. In the event that there is no service location listed for your country, please, contact the nearest facility for the necessary assistance.

In case of difficulties, do not hesitate to contact the Technical Department at abovementioned address.

TECHNICAL SPECIFICATIONS (DIN)

Power Amplifier Section

IHF Dynamic Power		
2 ohms		: 65W
4 ohms		: 60W
8 ohms		: 42W
Power Output Per Channel		
DIN 8 ohms	1 kHz 1% THD	: 38W
FTC 4 ohms	40–20 kHz 0.06% THD	: 40W
FTC 8 ohms	40–20 kHz 0.03% THD	: 35W
Total Harmonic Distortion at 8 ohms		: 0.015%
I.M. Distortion at 8 ohms		: 0.015%
Damping Factor		: 100

Phono Amplifier Section

MM Cartridge Input	
Frequency Difference	: ±0.5 dB
Input Sensitivity	: 2.5 mV
Input Impedance	: 47k Ohms

High Level Section

Frequency Response		: 10–60 kHz
Signal to Noise Ratio (A weighted)		: 87 dB
Input Sensitivity		: 150 mV
Input Impedance		: 33k Ohms
Tape Output Level [Phono (MM) 5 mV 1 kHz Input]		: 300 mV
Tape Output Impedance (Phono)		: 220 Ohms
Tone Control Action	100 Hz	: ±6 dB
	10 kHz	: ±6 dB

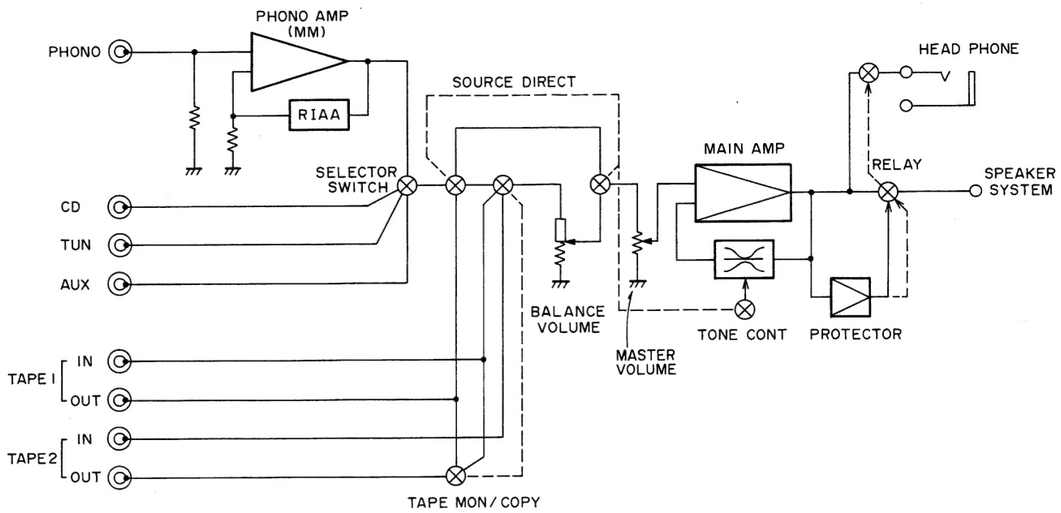
General

Power Requirements	
2 Voltage version	: 220V/240V
4 Voltage version	: 110V–240V
Power Consumption (Rated Power)	
AB Class Moode	: 135W
A Class Moode	: –
Dimensions	
Panel Width	: 420 mm
Panel Height	: 118 mm
Depth	: 280 mm
Weight	
Unit alone	: 10 kg

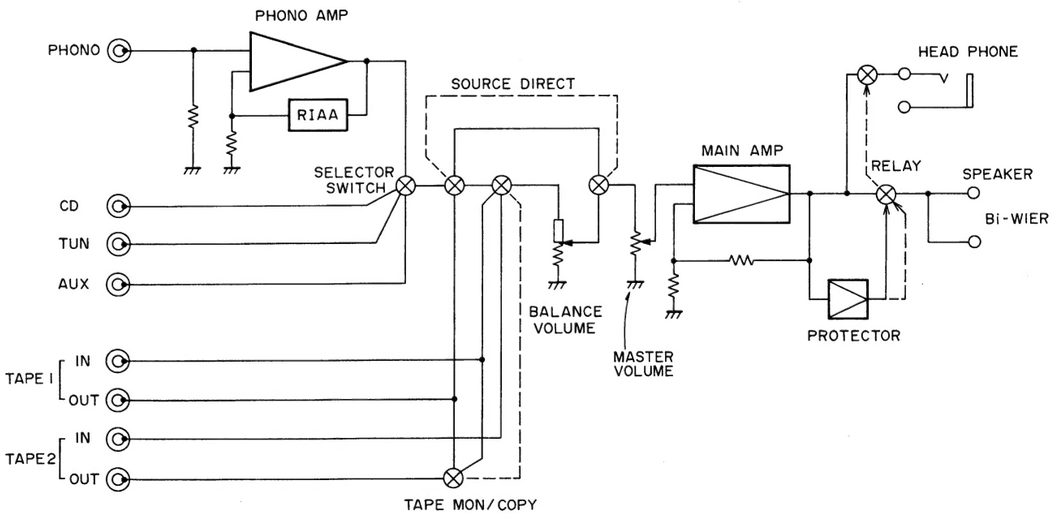
Specifications and appearance are subject to change for modification without notice.

1. BLOCK DIAGRAM

PM-30



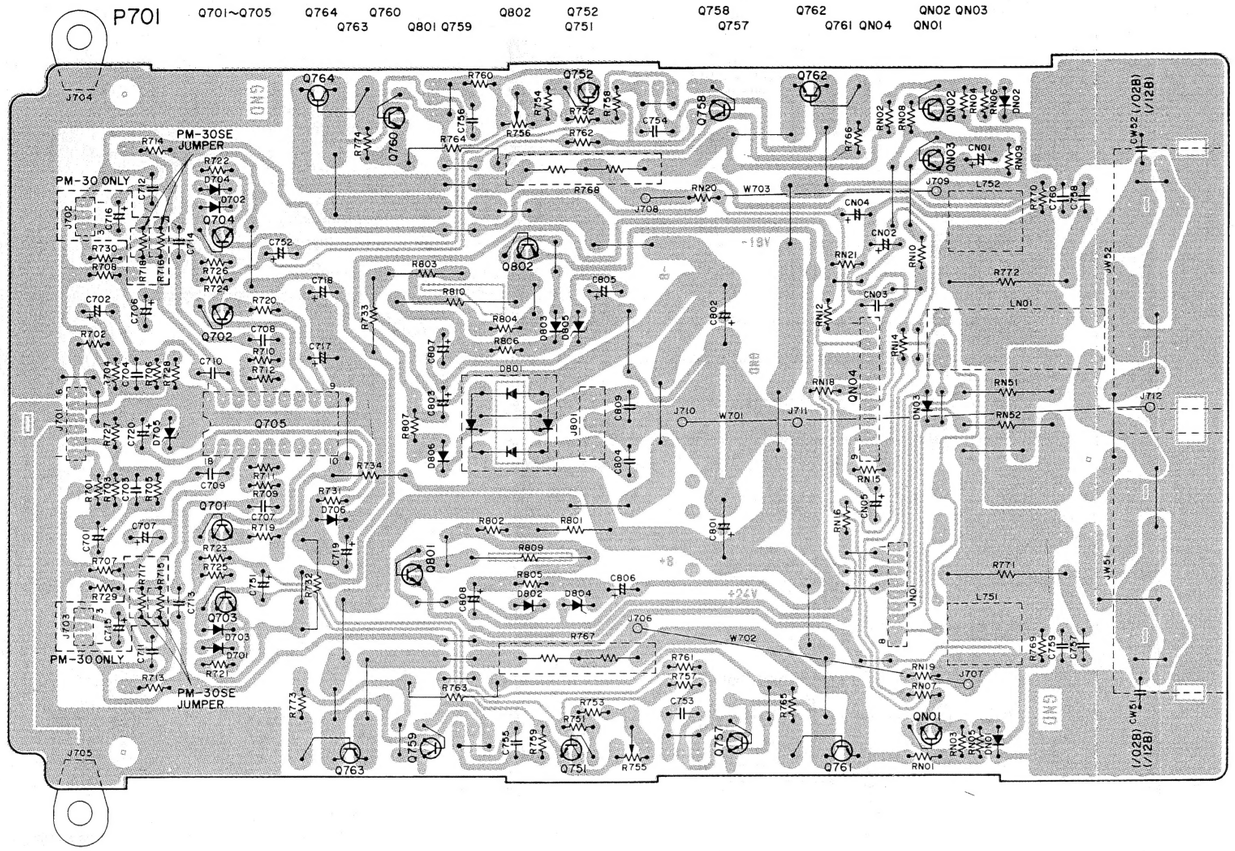
PM-30SE



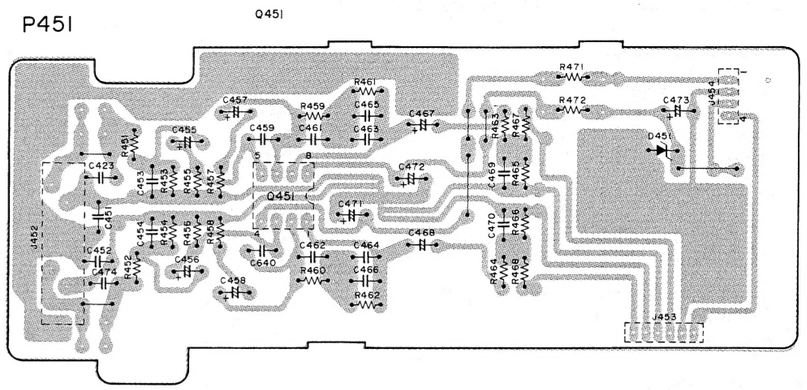
MARA-00542 / DRUCK 1

2. SCHEMATIC DIAGRAM AND PARTS LOCATION (Pattern side)

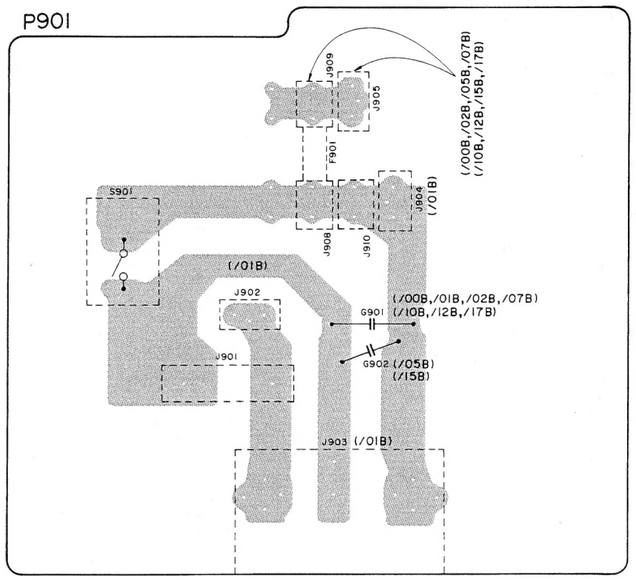
P701



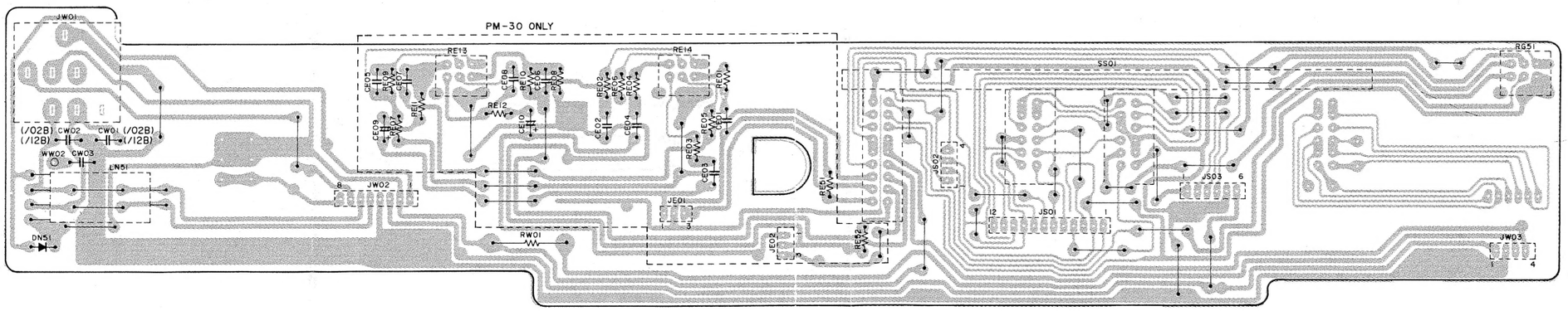
P451

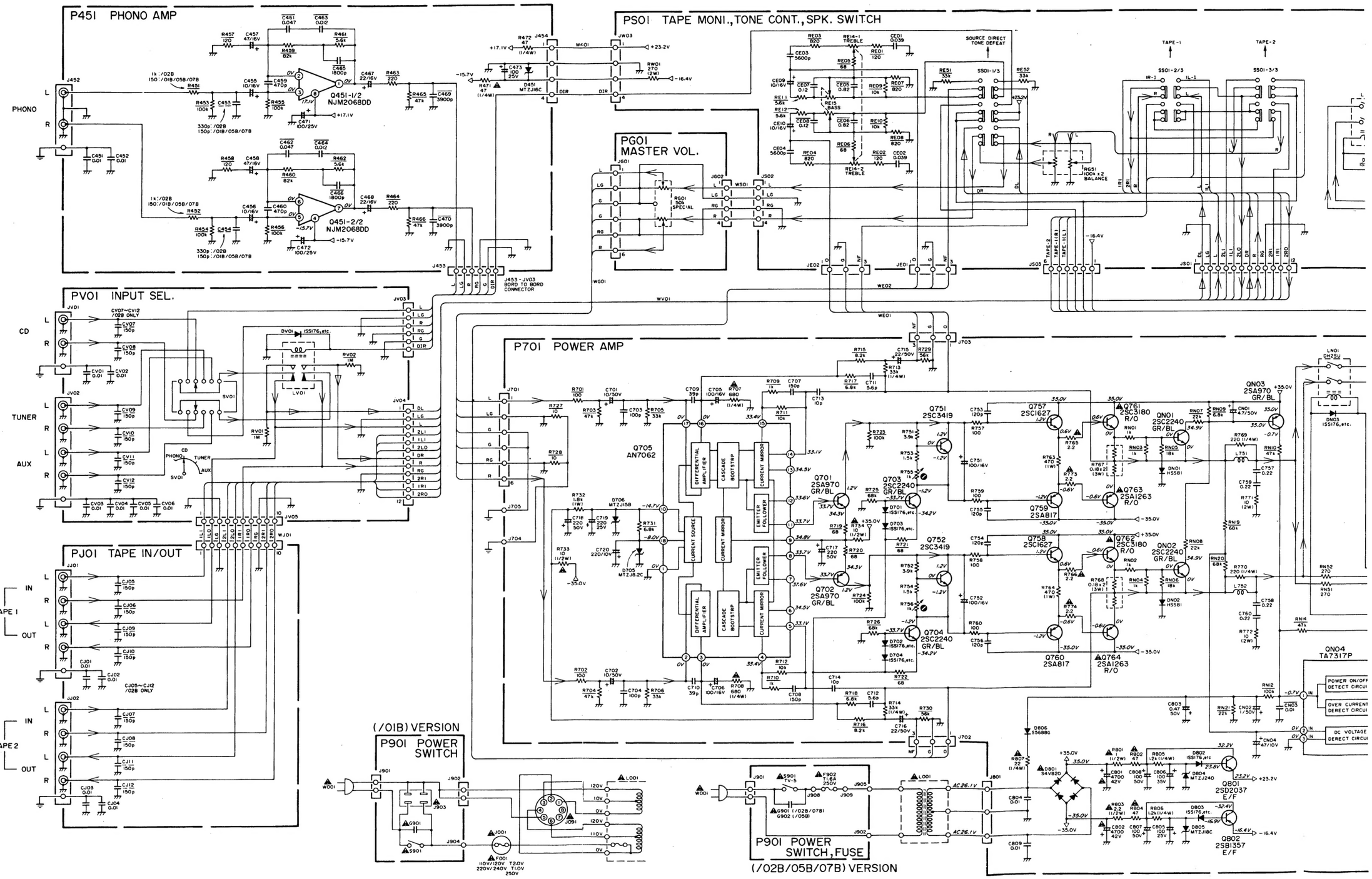


P901

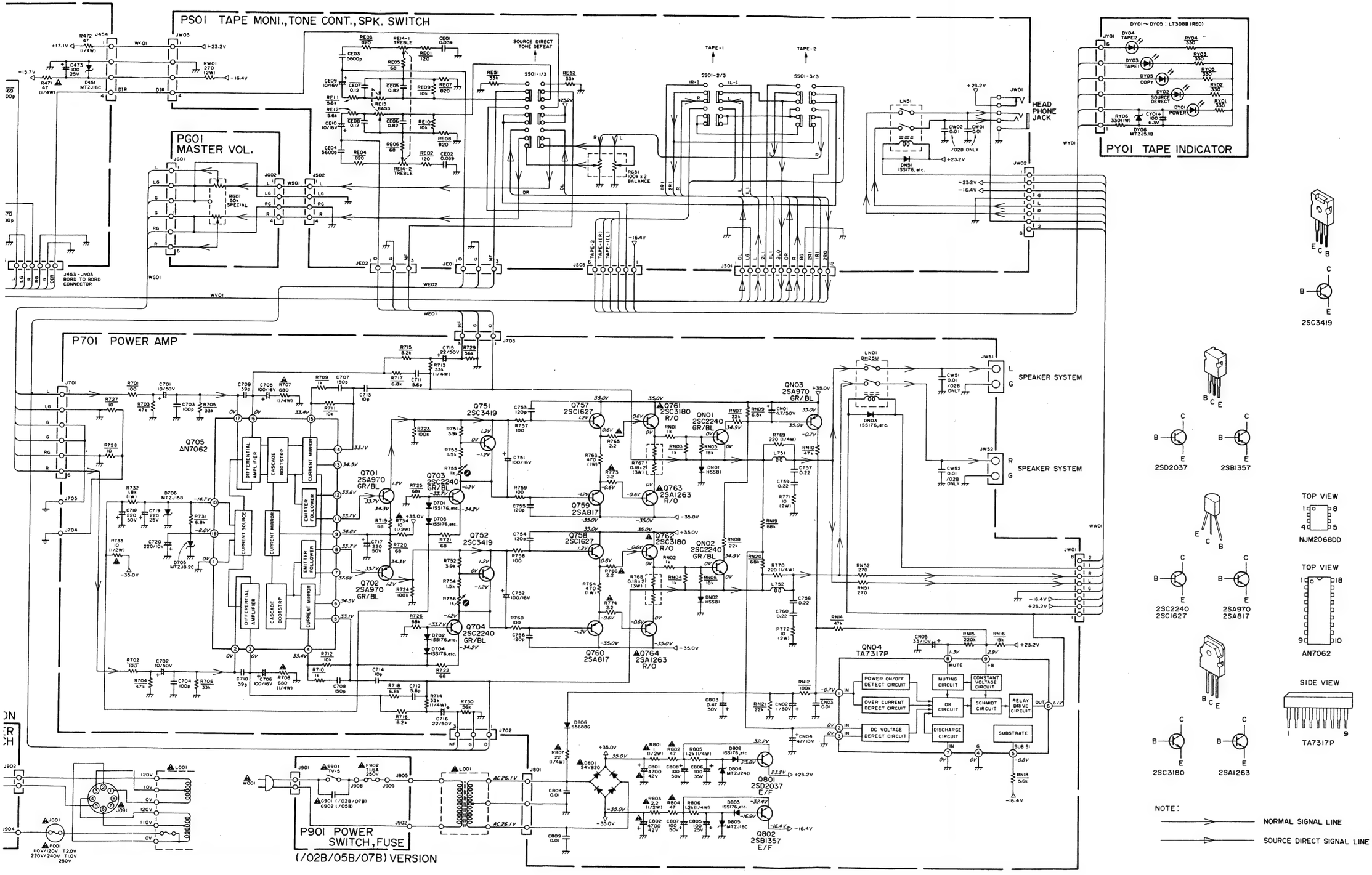


PS01





NOTE ON SAFETY:
Symbol ▲ Fire or electrical shock hazard. Only original parts should be used to replace any part marked with symbol ▲. Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.



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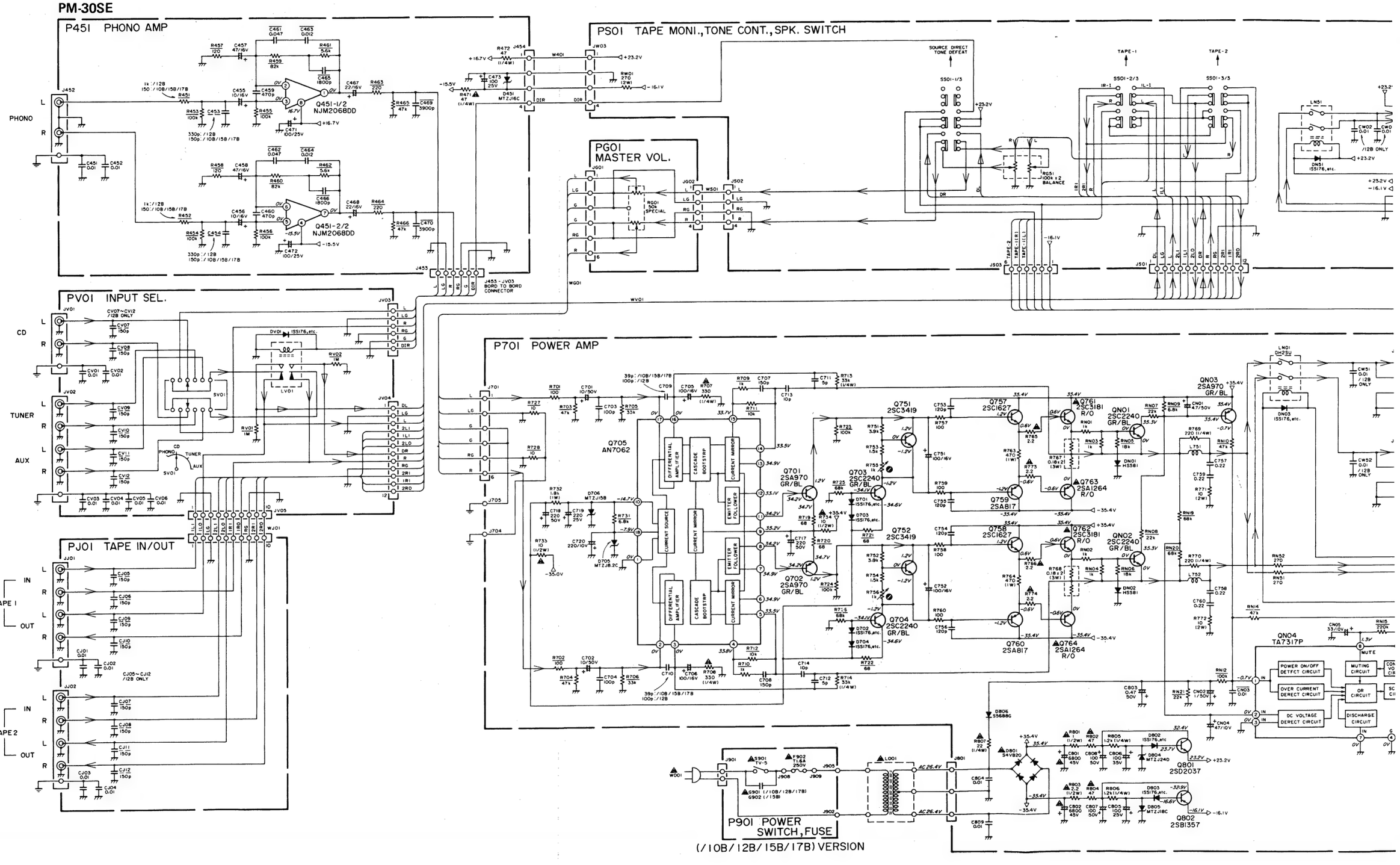
PM-30SE



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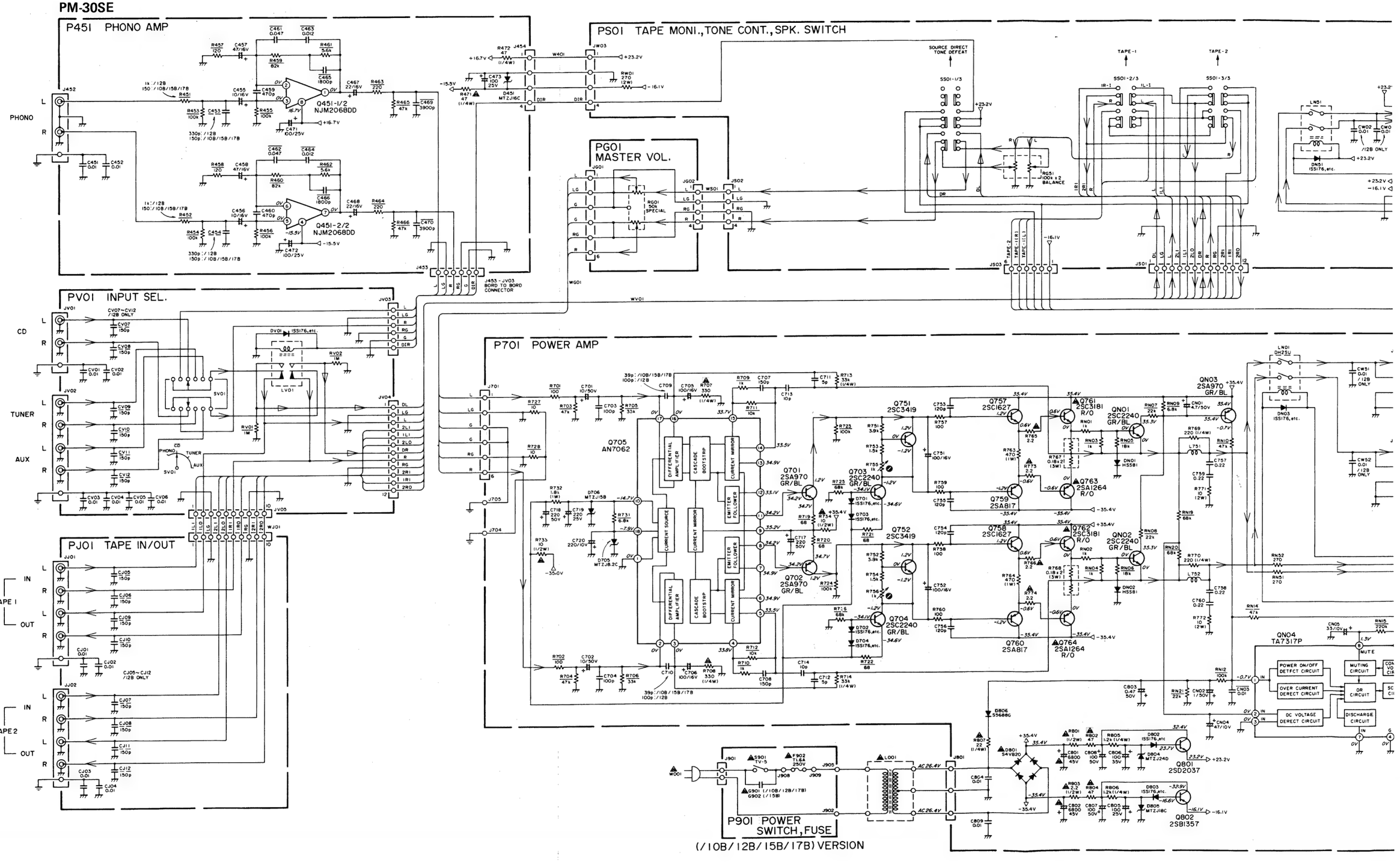
PM-30SE



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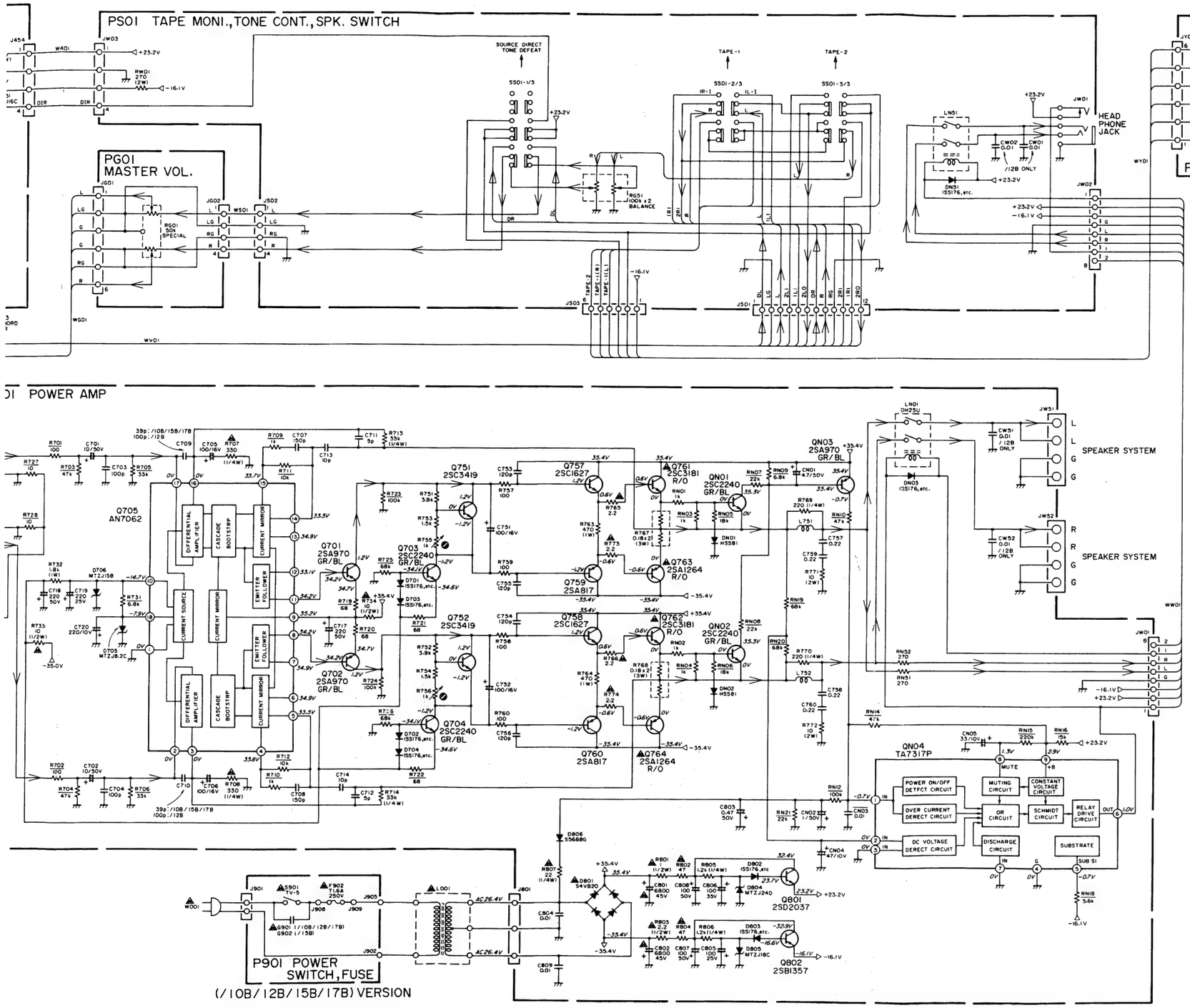

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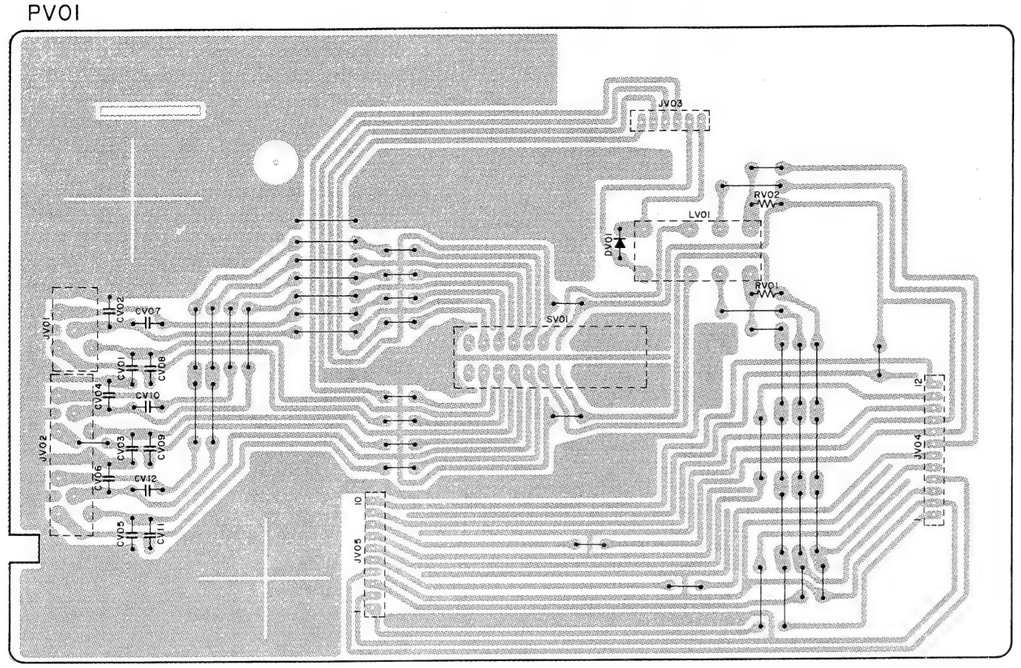
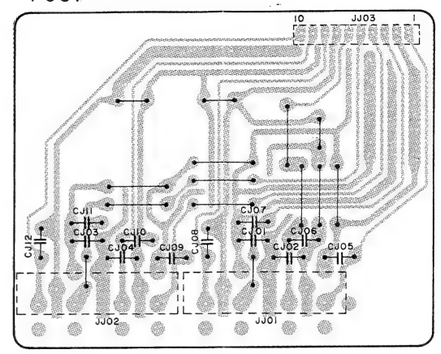
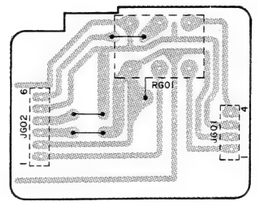
PV01



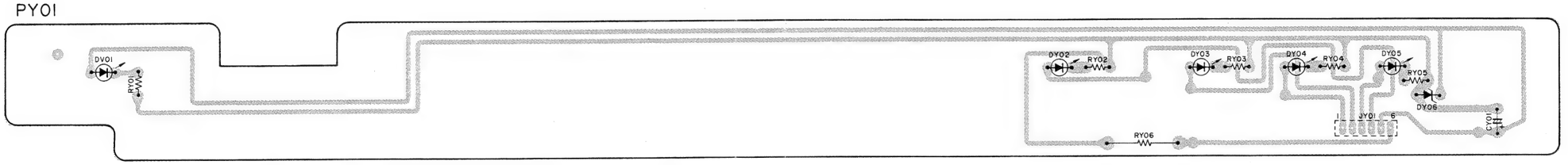
PJ01



PG01



PY01



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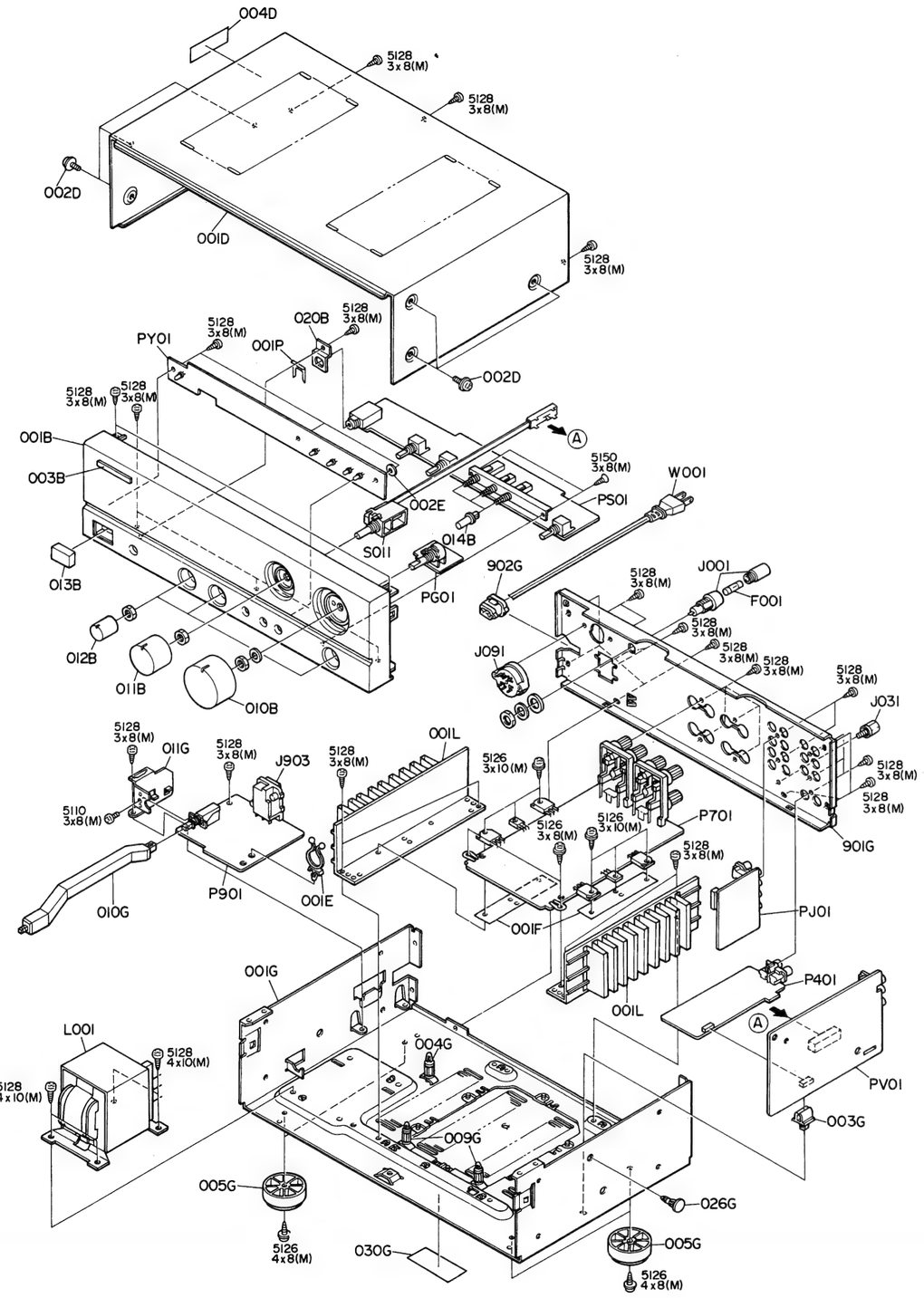
3. EXPLODED VIEW AND PARTS LIST



REF. DESIG.	PART NO.	DESCRIPTION
001B	4822 425 40176	Front Panel Assembly /01B/02B/05B/07B
	4822 425 40179	Front Panel Assembly /10B/12B/15B/17B
003B	4822 459 10943	Badge
010B	4822 413 41544	Knob, Volume
011B	4822 413 41545	Knob, Selector
012B	4822 413 41589	Knob, Tone/Balance /01B/02B/05B/07B
	4822 413 31551	Knob, Tone/Balance /10B/12B/15B/17B
013B	4822 410 60395	Button, Power
014B	4822 410 60343	Button, Speaker
002D	4822 501 11008	Screw
001F	4822 466 92914	Sheet, DENKA
005G	4822 462 41477	Leg
010G	4822 404 60628	Link, Power Switch
902G	4822 532 60948	Bushing, AC Cord /02B/07B/01B/10B/12B/17B
	4822 532 61184	Bushing, AC Cord /05B/15B
001P	4822 401 11351	Clamper, Phono Jack
▲ F001	4822 070 31002	Fuse, 1A 250V /01B
▲ F002	4822 253 30206	Fuse, 2A 250V /01B
▲ J001	4822 256 30233	Jack, Fuse Holder /01B
J031	4822 290 40297	Terminal, GND
▲ J091	4822 272 10227	Voltage Selector /01B
▲ J092	4822 265 10092	Jack, AC Adapter /01B
▲ L001	4822 146 21554	Power Transformer /02B/05B/07B/10B/12B/15B/17B
	4822 146 21567	Power Transformer /01B
S011	4822 273 10214	Rotary Switch, Selector
001T	4822 736 20695	User Manual /01B/02B/05B/07B
	4822 736 20715	User Manual /10B/12B/15B/17B

4. IDLING CURRENT ADJUSTMENT

(1) Before switching the power ON, set the Master Volume control to the minimum position and the Balance and Tone controls to the center positions. Also set semi-fixed resistors R755 (L CH) and R756 (R CH) on PCB P701 to the center positions.
(2) Each of the cement resistors R767 (L CH) and R768 (R CH) on the PCB P701 is provided with three test points. Connect a digital voltmeter, set for the DC voltage input, to the test points at the two extremities of the three test points of R767 or R768.
(3) After the setup above, switch the power ON and adjust semi-fixed resistor R755 (L CH) or R756 (R CH) on PCB P701 according to the digital voltmeter reading. The target setting value is 15 mV (41.6 mA) for both the L CH and R CH.

Please refer to the table below.

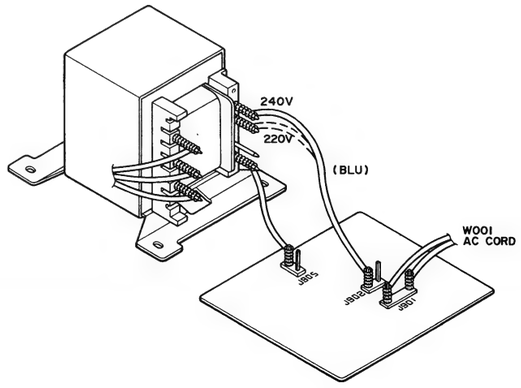
Elapsed time after power ON	Idling current setting value
30 sec. – 1 min.	15 mV
1 min. – 2 min.	16 mV
2 min. – 4 min.	16.6 mV
More than 4 min.	15 mV

Note on Safety:
Symbol ▲ Fire or electrical shock hazard. Only original parts should be used to replace any part marked with symbol ▲. Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.

5. HOW TO CHANGE THE SUPPLY VOLTAGE (/02B/05B/07B/10B/12B/15B/17B Versions)

With the /05B/07B/15B/17B Versions, the rated supply voltage of 240V can be changed to 220V. In the same way, the 220V rated supply voltage of the /02B/10B/12B Versions can be changed to 240V.

Refer to the following diagram for the voltage change procedure.



6. TEST EQUIPMENT REQUIRED FOR SERVICING

This table lists the test equipment required for servicing

Item	Use
Distortion Analyzer	Distortion measurements
Audio Oscillator	Sinewave and squarewave signal source
ACVTVM	Voltage measurements (AC)
Oscilloscope	Waveform analysis and trouble shooting and ASO aignment
Circuit Tester	Trouble shooting
DCVTVM	Voltage measurements (DC)
AC Wattmeter	Monitors primary power to amplifier
Line Voltmeter	Monitors potential of primary power to amplifier
Variable Autotransformer	Adjust level of primery power to amplifier
Shorting Plug	Shorts amplifier input to eliminate noise pickup

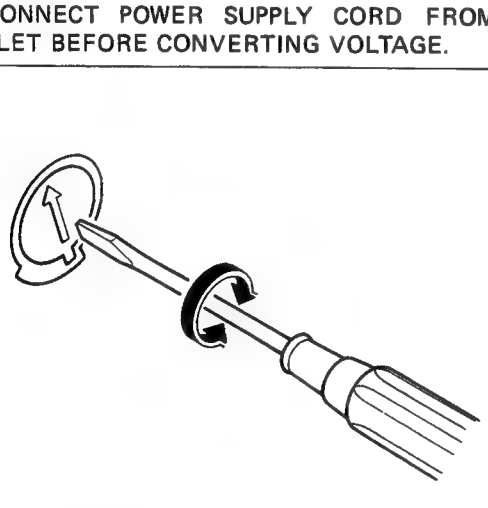
7. VOLTAGE CONVERSION

- **EUROPEAN MODEL ONLY**

To convert the unit to a different power source voltage, change the position as illustrated in the drawing below.

VOLTAGE SELECTOR

CAUTION
DISCONNECT POWER SUPPLY CORD FROM AC OUTLET BEFORE CONVERTING VOLTAGE.



8. ELECTRICAL PARTS LIST

ASSIGNMENT OF COMMON PARTS CODES.

RESISTOR

R***: (1) GD05---140, Carbon film fixed resistor, ±5%, 1/4W
R***: (2) GD05---160, Carbon film fixed resistor, ±5%, 1/6W

① — Resistance value

Examples

① Resistance value

0.1Ω...001	10Ω...100	1kΩ...102	100kΩ...104
0.5Ω...005	18Ω...180	2.7kΩ...272	680kΩ...684
1Ω...010	100Ω...101	10kΩ...103	1MΩ...105
6.8Ω...068	390Ω...391	22kΩ...223	4.7MΩ...475

(Note) Please distinguish 1/4W from 1/6W by the shape of parts used actually.

C***: CERAMIC CAP.

(1) DD1---370, Ceramic condenser
①② Disc type
Temp. coeff. P350 ~ N1000, 50V
Capacity value
Tolerance

Examples

① Tolerance (Capacity deviation)
±0.25pF...0
±0.5pF...1
±5%...5

* Tolerance of COMMON PARTS handled here are as follows:
0.5pF ~ 5pF...±0.25pF
6pF ~ 10pF...±0.5pF
12pF ~ 560pF...±5%

② Capacity value

0.5pF...005	3pF...030	100pF...101
1pF...010	10pF...100	220pF...221
1.5pF...015	47pF...470	560pF...561

C***: CERAMIC CAP.

(1) DK16---300, High dielectric constant ceramic condenser
① Disc type
Temp. chara. 2B4, 50V
Capacity value

Example

② Capacity value

100pF...101	1000pF...102	10000pF...103
470pF...471	2200pF...222	

C***: ELECTROLY CAP. (⧧), FILM CAP. (⧦)

(1) EA------10, Electrolytic condenser
①② One-way lead type, Tolerance ±20%
Dielectric strength
Capacity value

Examples

① Capacity value

0.1μF...104	4.7μF...475	100μF...107
0.33μF...334	10μF...106	330μF...337
1μF...105	22μF...226	1100μF...108
		2200μF...228

② Working voltage

6.3V...006	25V...025
10V...010	35V...035
16V...016	50V...050

(2) DF15---350, Plastic film condenser
① One-way type, Mylar ±5% 50V
Capacity value

Examples

① Capacity value

0.001μF (1000pF)...102	0.1μF...104
0.0018μF.....182	0.56μF...564
0.01μF.....103	1μF...105
0.015μF.....153	

REF. DESIG.	PART NO.	DESCRIPTION
		PG01-MASTER VOLUME CIRCUIT BOARD
RG01	4822 101 30653	Variable Resistor 50KΩ
		PJ01-TAPE IN/OUT CIRCUIT BOARD
CJ01 ~ CJ04	4822 122 32486	Ceramic Cap. 0.01μF +80% −20%
JJ01	4822 266 30284	Terminal, 4P RCA
JJ02	4822 266 30284	Terminal, 4P RCA
		PS01-TAPE/TONE/SPK. CIRCUIT BOARD
CE09	4822 124 90352	Elect Cap. 10μF 16V /01B/02B/05B/07B
CE10	4822 124 90352	Elect Cap. 10μF 16V /01B/02B/05B/07B
CW01	4822 122 32486	Ceramic 0.01μF +80% −20% /02B/12B
CW02	4822 122 32486	Ceramic 0.01μF +80% −20% /02B/12B
RE13	4822 100 30139	Variable Resistor 50KΩ(C) /01B/02B/05B/07B
RE14	4822 100 30139	Variable Resistor 50KΩ(C) /01B/02B/05B/07B
RG51	4822 100 30138	Variable Resistor 100KΩ(MN)
RW01	4822 116 60455	Metal Resistor 270Ω ±5% 2W
DN51	4822 130 33305	Diode 1SS176, etc.
JW01	4822 267 31227	Jack, Headphone /01B/02B/05B/07B
	4822 267 31229	Jack /10B/12B/15B/17B
LN51	4822 280 20196	Relay
SS01	4822 276 12956	Push Switch
		PV01-INPUT SELECTOR CIRCUIT BOARD
CV01 ~ CV06	4822 122 32486	Ceramic Cap. 0.01μF +80% −20%
DV01	4822 130 33305	Diode 1SS176, etc.
JV01	4822 266 30282	Terminal, 2P RCA
JV02	4822 266 30284	Terminal, 4P RCA
LV01	4822 280 20195	Relay, SZ-2104
SV01	4822 277 21412	Slide Switch, Selector

REF. DESIG.	PART NO.	DESCRIPTION
		PY01-TAPE INDICATOR CIRCUIT BOARD
CY01	4822 124 21737	Elect Cap. 100μF 6.3V
RY06	4822 111 50474	Resistor 330Ω ±5%
DY01 ~ DY05	4822 130 80326	L.E.D. LT3D8B (RED)
DY06	4822 130 80317	Zener Diode RD5.1JB2/MTZJ5.1B
		P451-PHONO AMP. CIRCUIT BOARD
		P451-CAPACITORS
C451	4822 122 32486	Ceramic 0.01μF +80% −20%
C452	4822 122 32486	Ceramic 0.01μF +80% −20%
C453	4822 126 11069	Ceramic 150pF ±10% /01B/05B/07B
	4822 121 51037	Film 150pF ±5% /10B/12B/15B/17B
C454	4822 126 11069	Ceramic 150pF ±10% /01B/05B/07B
	4822 121 51037	Film 150pF ±5% /10B/12B/15B/17B
C455	4822 124 90352	Elect 10μF 16V
C456	4822 124 90352	Elect 10μF 16V
C457	4822 124 41539	Elect 47μF 16V
C458	4822 124 41539	Elect 47μF 16V
C459	4822 126 11127	Ceramic 470pF ±10% /02B
C460	4822 126 11127	Ceramic 470pF ±10% /02B
C461	4822 121 42764	Film 0.047μF ±5% /10B/12B/15B/17B
C462	4822 121 42764	Film 0.047μF ±5% /10B/12B/15B/17B
C463	4822 121 42755	Film 0.012μF ±5% /10B/12B/15B/17B
C464	4822 121 42755	Film 0.012μF ±5% /10B/12B/15B/17B
C465	4822 121 42758	Film 1800pF ±5% /10B/12B/15B/17B
C466	4822 121 42758	Film 1800pF ±5% /10B/12B/15B/17B
C467	4822 124 90358	Elect 22μF 16V
C468	4822 124 90358	Elect 22μF 16V
C469	4822 121 42763	Film 3900pF ±5% /10B/12B/15B/17B
C470	4822 121 42763	Film 3900pF ±5% /10B/12B/15B/17B
C471	4822 124 41535	Elect 100μF 25V /01B/02B/05B/07B
	4822 124 90365	Elect 220μF 25V /10B/12B/15B/17B
C472	4822 124 41535	Elect 100μF 25V /01B/02B/05B/07B
	4822 124 90365	Elect 220μF 25V /10B/12B/15B/17B
C473	4822 124 41535	Elect 100μF 25V /01B/02B/05B/07B
	4822 124 90365	Elect 220μF 25V /10B/12B/15B/17B

REF. DESIG.	PART NO.	DESCRIPTION
		P451-RESISTORS
▲R471	4822 111 90731	47Ω ±2% ¼W, Fuse
R472	4822 111 30006	47Ω ±5% ¼W
		P451-SEMICONDUCTORS
D451	4822 130 80498	Zener RD16JB2/MTZJ16C
Q451	4822 209 73064	IC NJM2068DD
		P451-MISCELLANEOUS
J452	4822 265 20355	Terminal, 2P RCA
		P701-POWER AMP. CIRCUIT BOARD
		P701-CAPACITORS
CN01	4822 124 22274	Elect 4.7μF 50V
CN02	4822 124 41543	Elect 1μF 50V
CN04	4822 124 22275	Elect 47μF 10V
CN05	4822 124 23417	Elect 33μF 10V
CW51	4822 122 32486	Ceramic 0.01μF +80% −20% /02B/12B
CW52	4822 122 32486	Ceramic 0.01μF +80% −20% /02B/12B
C701	4822 124 22571	Elect 10μF 50V
C702	4822 124 22571	Elect 10μF 50V
C703	4822 121 51517	Film 100pF ±5%
C704	4822 121 51517	Film 100pF ±5%
C705	4822 124 90354	Elect 100μF 16V
C706	4822 124 90354	Elect 100μF 16V
C707	4822 121 51037	Film 150pF ±5% /01B/02B/05B/07B
	4822 121 51037	Film 150pF ±5% /10B/15B/17B
	4822 126 11069	Ceramic 150pF /12B
C708	4822 121 51037	Film 150pF ±5% /01B/02B/05B/07B
	4822 121 51037	Film 150pF ±5% /10B/15B/17B
	4822 126 11069	Ceramic 150pF /12B
C709	4822 126 11068	Ceramic 39pF ±5% /01B/02B/05B/07B
	4822 121 43135	Film 39pF ±5% /10B/15B/17B
	4822 126 10364	Ceramic 100pF /12B
C710		Ceramic 39pF ±5% /01B/02B/05B/07B
	4822 121 43135	Film 39pF ±5% /10B/15B/17B
	4822 126 10364	Ceramic 100pF /12B
C711	4822 126 11126	Ceramic 5.6pF ±10% /01B/02B/05B/07B
	4822 121 43128	Film 10pF ±10% /10B/12B/15B/17B
C712	4822 126 11126	Ceramic 5.6pF ±10% /01B/02B/05B/07B
	4822 121 43128	Film 10pF ±10% /10B/12B/15B/17B
C713	4822 126 11125	Ceramic 10pF ±5% /01B/02B/05B/07B
	4822 121 43128	Film 10pF ±10% /10B/12B/15B/17B

REF. DESIG.	PART NO.	DESCRIPTION
C714	4822 126 11125	Ceramic 10pF ±5% /01B/02B/05B/07B
	4822 121 43128	Film 10pF ±10% /10B/12B/15B/17B
C715	4822 124 90362	Elect 22μF 50V /01B/02B/05B/07B
C716	4822 124 90362	Elect 22μF 50V /01B/02B/05B/07B
C717	4822 124 90366	Elect 220μF 50V
C718	4822 124 90366	Elect 220μF 50V
C719	4822 124 41535	Elect 100μF 25V /01B/02B/05B/07B
	4822 124 90365	Elect 220μF 25V /10B/12B/15B/17B
C720	4822 124 41535	Elect 100μF 25V /01B/02B/05B/07B
	4822 124 90365	Elect 220μF 25V /10B/12B/15B/17B
C751	4822 124 90354	Elect 100μF 16V
C752	4822 124 90354	Elect 100μF 16V
C753 ~ C756	4822 121 43126	Film 120pF ±5%
▲ C801	4822 124 23458	Elect 4700μF 42V /01B/02B/05B/07B
	4822 124 42044	Elect 6800μF 45V /10B/12B/15B/17B
▲ C802	4822 124 23458	Elect 4700μF 42V /01B/02B/05B/07B
	4822 124 42044	Elect 6800μF 45V /10B/12B/15B/17B
C803	4822 124 22273	Elect 0.47μF 50V
C804	4822 122 32486	Ceramic 0.01μF +80% −20%
C805	4822 124 41535	Elect 100μF 25V
C806	4822 124 41536	Elect 100μF 35V
C807	4822 124 90355	Elect 100μF 50V
C808	4822 124 90355	Elect 100μF 50V
C809	4822 122 32486	Ceramic 0.01μF +80% −20%
		P701-RESISTORS
RN01	4822 111 91257	1KΩ ±5% 1/6W
RN02	4822 111 91257	1KΩ ±5% 1/6W
RN51	4822 116 60455	270Ω ±5% 2W, Metal
RN52	4822 116 60455	270Ω ±5% 2W, Metal
▲ R707	4822 116 82608	680Ω ±2% ¼W, Fuse /02B/05B
	4822 116 81748	330Ω ±2% ¼W, Fuse /12B/15B
▲ R708	4822 116 82608	680Ω ±2% ¼W, Fuse /02B/05B
	4822 116 81748	330Ω ±2% ¼W, Fuse /12B/15B
R713	4822 273 10214	33KΩ ±5% ¼W
R714	4822 273 10214	33KΩ ±5% ¼W

REF. DESIG.	PART NO.	DESCRIPTION
R732	4822 116 60343	1.8KΩ ±5% 1W
▲ R733	4822 116 60313	10Ω ±5% ½W, Fusible
▲ R734	4822 116 60313	10Ω ±5% ½W, Fusible
R755	4822 100 11373	4.7KΩ, Trimming
R756	4822 100 11373	4.7KΩ, Trimming
R757	4822 111 91285	100Ω ±5% 1/6W
R758	4822 111 91285	100Ω ±5% 1/6W
R759	4822 111 91285	100Ω ±5% 1/6W
R760	4822 111 91285	100Ω ±5% 1/6W
R763	4822 116 60267	470Ω ±5% 1/6W
R764	4822 116 60267	470Ω ±5% 1/6W
▲ R765	4822 111 91424	2.2Ω ±5% 1/6W
▲ R766	4822 111 91424	2.2Ω ±5% 1/6W
R767	4822 116 82049	0.18Ωx2 ±10% 3W
R768	4822 116 82049	0.18Ωx2 ±10% 3W
R769	4822 116 52849	220Ω ±5% ¼W
R770	4822 116 52849	220Ω ±5% ¼W
R771	4822 111 90726	10Ω ±5% 2W
R772	4822 111 90726	10Ω ±5% 2W
▲ R773	4822 111 91424	2.2Ω ±5% 1/6W
▲ R774	4822 111 91424	2.2Ω ±5% 1/6W
▲ R801	4822 116 60306	1Ω ±5% ½W, Fusible
▲ R802	4822 111 90731	47Ω ±2% ¼W, Fuse
▲ R803	4822 111 60308	2.2Ω ±5% ½W, Fusible
▲ R804	4822 111 90731	47Ω ±2% ¼W, Fuse
R805	4822 111 91423	1.2KΩ ±5% ¼W
R806	4822 111 91423	1.2KΩ ±5% ¼W
▲ R807	4822 113 90119	22Ω ±2% ¼W, Fuse
		P701-SEMICONDUCTORS
DN01	4822 130 80837	Diode HSS81
DN02	4822 130 80837	Diode HSS81
DN03	4822 130 33305	Diode 1SS176, etc.
D701 ~ D704	4822 130 33305	Diode 1SS176, etc.
D705	4822 130 80273	Zener RD8.2JB2/MTZJ8.2C
D706	4822 130 80322	Zener RD15JB1/MTZJ15B
▲ D801	4822 130 31007	Diode S4VB-20
D802	4822 130 33305	Diode 1SS176, etc.
D803	4822 130 33305	Diode 1SS176, etc.
D804	4822 130 80116	Zener RD24JB2/MTZJ24D
D805	4822 130 80498	Zener RD16JB2/MTZJ16C
▲ D806	4822 130 80839	Diode S5688G
QN01	4822 130 43233	Transistor 2SC2240(GR, BL)
QN02	4822 130 43233	Transistor 2SC2240(GR, BL)
QN03	4822 130 42951	Transistor 2SA970(GR, BL)
QN04	4822 290 83312	IC TA7317P
Q701	4822 130 42951	Transistor 2SA970(GR, BL)
Q702	4822 130 42951	Transistor 2SA970(GR, BL)
Q703	4822 130 43233	Transistor 2SC2240(GR, BL)
Q704	4822 130 43233	Transistor 2SC2240(GR, BL)
Q705	4822 209 83732	IC AN7062P
Q751	4822 130 60526	Transistor 2SD1508
Q752	4822 130 60526	Transistor 2SD1508
Q757	4822 130 60696	Transistor 2SC1627(O, Y)
Q758	4822 130 60696	Transistor 2SC1627(O, Y)
Q759	4822 130 69693	Transistor 2SA817(O, Y)

REF. DESIG.	PART NO.	DESCRIPTION
		PY01-TAPE INDICATOR CIRCUIT BOARD
CY01	4822 124 21737	Elect Cap. 100μF 6.3V
RY06	4822 111 50474	Resistor 330Ω ±5%
DY01 ~ DY05	4822 130 80326	L.E.D. LT3D8B (RED)
DY06	4822 130 80317	Zener Diode RD5.1JB2/MTZJ5.1B
		P451-PHONO AMP. CIRCUIT BOARD
		P451-CAPACITORS
C451	4822 122 32486	Ceramic 0.01μF +80% −20%
C452	4822 122 32486	Ceramic 0.01μF +80% −20%
C453	4822 126 11069	Ceramic 150pF ±10% /01B/05B/07B
	4822 121 51037	Film 150pF ±5% /10B/12B/15B/17B
C454	4822 126 11069	Ceramic 150pF ±10% /01B/05B/07B
	4822 121 51037	Film 150pF ±5% /10B/12B/15B/17B
C455	4822 124 90352	Elect 10μF 16V
C456	4822 124 90352	Elect 10μF 16V
C457	4822 124 41539	Elect 47μF 16V
C458	4822 124 41539	Elect 47μF 16V
C459	4822 126 11127	Ceramic 470pF ±10% /02B
C460	4822 126 11127	Ceramic 470pF ±10% /02B
C461	4822 121 42764	Film 0.047μF ±5% /10B/12B/15B/17B
C462	4822 121 42764	Film 0.047μF ±5% /10B/12B/15B/17B
C463	4822 121 42755	Film 0.012μF ±5% /10B/12B/15B/17B
C464	4822 121 42755	Film 0.012μF ±5% /10B/12B/15B/17B
C465	4822 121 42758	Film 1800pF ±5% /10B/12B/15B/17B
C466	4822 121 42758	Film 1800pF ±5% /10B/12B/15B/17B
C467	4822 124 90358	Elect 22μF 16V
C468	4822 124 90358	Elect 22μF 16V
C469	4822 121 42763	Film 3900pF ±5% /10B/12B/15B/17B
C470	4822 121 42763	Film 3900pF ±5% /10B/12B/15B/17B
C471	4822 124 41535	Elect 100μF 25V /01B/02B/05B/07B
	4822 124 90365	Elect 220μF 25V /10B/12B/15B/17B
C472	4822 124 41535	Elect 100μF 25V /01B/02B/05B/07B
	4822 124 90365	Elect 220μF 25V /10B/12B/15B/17B
C473	4822 124 41535	Elect 100μF 25V /01B/02B/05B/07B
	4822 124 90365	Elect 220μF 25V /10B/12B/15B/17B

REF. DESIG.	PART NO.	DESCRIPTION
		P451-RESISTORS
▲R471	4822 111 90731	47Ω ±2% ¼W, Fuse
R472	4822 111 30006	47Ω ±5% ¼W
		P451-SEMICONDUCTORS
D451	4822 130 80498	Zener RD16JB2/MTZJ16C
Q451	4822 209 73064	IC NJM2068DD
		P451-MISCELLANEOUS
J452	4822 265 20355	Terminal, 2P RCA
		P701-POWER AMP. CIRCUIT BOARD
		P701-CAPACITORS
CN01	4822 124 22274	Elect 4.7μF 50V
CN02	4822 124 41543	Elect 1μF 50V
CN04	4822 124 22275	Elect 47μF 10V
CN05	4822 124 23417	Elect 33μF 10V
CW51	4822 122 32486	Ceramic 0.01μF +80% −20% /02B/12B
CW52	4822 122 32486	Ceramic 0.01μF +80% −20% /02B/12B
C701	4822 124 22571	Elect 10μF 50V
C702	4822 124 22571	Elect 10μF 50V
C703	4822 121 51517	Film 100pF ±5%
C704	4822 121 51517	Film 100pF ±5%
C705	4822 124 90354	Elect 100μF 16V
C706	4822 124 90354	Elect 100μF 16V
C707	4822 121 51037	Film 150pF ±5% /01B/02B/05B/07B
	4822 121 51037	Film 150pF ±5% /10B/15B/17B
	4822 126 11069	Ceramic 150pF /12B
C708	4822 121 51037	Film 150pF ±5% /01B/02B/05B/07B
	4822 121 51037	Film 150pF ±5% /10B/15B/17B
	4822 126 11069	Ceramic 150pF /12B
C709	4822 126 11068	Ceramic 39pF ±5% /01B/02B/05B/07B
	4822 121 43135	Film 39pF ±5% /10B/15B/17B
	4822 126 10364	Ceramic 100pF /12B
C710		Ceramic 39pF ±5% /01B/02B/05B/07B
	4822 121 43135	Film 39pF ±5% /10B/15B/17B
	4822 126 10364	Ceramic 100pF /12B
C711	4822 126 11126	Ceramic 5.6pF ±10% /01B/02B/05B/07B
	4822 121 43128	Film 10pF ±10% /10B/12B/15B/17B
C712	4822 126 11126	Ceramic 5.6pF ±10% /01B/02B/05B/07B
	4822 121 43128	Film 10pF ±10% /10B/12B/15B/17B
C713	4822 126 11125	Ceramic 10pF ±5% /01B/02B/05B/07B
	4822 121 43128	Film 10pF ±10% /10B/12B/15B/17B

REF. DESIG.	PART NO.	DESCRIPTION
C714	4822 126 11125	Ceramic 10pF ±5% /01B/02B/05B/07B
	4822 121 43128	Film 10pF ±10% /10B/12B/15B/17B
C715	4822 124 90362	Elect 22μF 50V /01B/02B/05B/07B
C716	4822 124 90362	Elect 22μF 50V /01B/02B/05B/07B
C717	4822 124 90366	Elect 220μF 50V
C718	4822 124 90366	Elect 220μF 50V
C719	4822 124 41535	Elect 100μF 25V /01B/02B/05B/07B
	4822 124 90365	Elect 220μF 25V /10B/12B/15B/17B
C720	4822 124 41535	Elect 100μF 25V /01B/02B/05B/07B
	4822 124 90365	Elect 220μF 25V /10B/12B/15B/17B
C751	4822 124 90354	Elect 100μF 16V
C752	4822 124 90354	Elect 100μF 16V
C753 ~ C756	4822 121 43126	Film 120pF ±5%
▲ C801	4822 124 23458	Elect 4700μF 42V /01B/02B/05B/07B
	4822 124 42044	Elect 6800μF 45V /10B/12B/15B/17B
▲ C802	4822 124 23458	Elect 4700μF 42V /01B/02B/05B/07B
	4822 124 42044	Elect 6800μF 45V /10B/12B/15B/17B
C803	4822 124 22273	Elect 0.47μF 50V
C804	4822 122 32486	Ceramic 0.01μF +80% −20%
C805	4822 124 41535	Elect 100μF 25V
C806	4822 124 41536	Elect 100μF 35V
C807	4822 124 90355	Elect 100μF 50V
C808	4822 124 90355	Elect 100μF 50V
C809	4822 122 32486	Ceramic 0.01μF +80% −20%
		P701-RESISTORS
RN01	4822 111 91257	1KΩ ±5% 1/6W
RN02	4822 111 91257	1KΩ ±5% 1/6W
RN51	4822 116 60455	270Ω ±5% 2W, Metal
RN52	4822 116 60455	270Ω ±5% 2W, Metal
▲ R707	4822 116 82608	680Ω ±2% ¼W, Fuse /02B/05B
	4822 116 81748	330Ω ±2% ¼W, Fuse /12B/15B
▲ R708	4822 116 82608	680Ω ±2% ¼W, Fuse /02B/05B
	4822 116 81748	330Ω ±2% ¼W, Fuse /12B/15B
R713	4822 273 10214	33KΩ ±5% ¼W
R714	4822 273 10214	33KΩ ±5% ¼W

REF. DESIG.	PART NO.	DESCRIPTION
R732	4822 116 60343	1.8KΩ ±5% 1W
▲ R733	4822 116 60313	10Ω ±5% ½W, Fusible
▲ R734	4822 116 60313	10Ω ±5% ½W, Fusible
R755	4822 100 11373	4.7KΩ, Trimming
R756	4822 100 11373	4.7KΩ, Trimming
R757	4822 111 91285	100Ω ±5% 1/6W
R758	4822 111 91285	100Ω ±5% 1/6W
R759	4822 111 91285	100Ω ±5% 1/6W
R760	4822 111 91285	100Ω ±5% 1/6W
R763	4822 116 60267	470Ω ±5% 1/6W
R764	4822 116 60267	470Ω ±5% 1/6W
▲ R765	4822 111 91424	2.2Ω ±5% 1/6W
▲ R766	4822 111 91424	2.2Ω ±5% 1/6W
R767	4822 116 82049	0.18Ω×2 ±10% 3W
R768	4822 116 82049	0.18Ω×2 ±10% 3W
R769	4822 116 52849	220Ω ±5% ¼W
R770	4822 116 52849	220Ω ±5% ¼W
R771	4822 111 90726	10Ω ±5% 2W
R772	4822 111 90726	10Ω ±5% 2W
▲ R773	4822 111 91424	2.2Ω ±5% 1/6W
▲ R774	4822 111 91424	2.2Ω ±5% 1/6W
▲ R801	4822 116 60306	1Ω ±5% ½W, Fusible
▲ R802	4822 111 90731	47Ω ±2% ¼W, Fuse
▲ R803	4822 111 60308	2.2Ω ±5% ½W, Fusible
▲ R804	4822 111 90731	47Ω ±2% ¼W, Fuse
R805	4822 111 91423	1.2KΩ ±5% ¼W
R806	4822 111 91423	1.2KΩ ±5% ¼W
▲ R807	4822 113 90119	22Ω ±2% ¼W, Fuse
		P701-SEMICONDUCTORS
DN01	4822 130 80837	Diode HSS81
DN02	4822 130 80837	Diode HSS81
DN03	4822 130 33305	Diode 1SS176, etc.
D701 ~ D704	4822 130 33305	Diode 1SS176, etc.
D705	4822 130 80273	Zener RD8.2JB2/MTZJ8.2C
D706	4822 130 80322	Zener RD15JB1/MTZJ15B
▲ D801	4822 130 31007	Diode S4VB-20
D802	4822 130 33305	Diode 1SS176, etc.
D803	4822 130 33305	Diode 1SS176, etc.
D804	4822 130 80116	Zener RD24JB2/MTZJ24D
D805	4822 130 80498	Zener RD16JB2/MTZJ16C
▲ D806	4822 130 80839	Diode S5688G
QN01	4822 130 43233	Transistor 2SC2240(GR, BL)
QN02	4822 130 43233	Transistor 2SC2240(GR, BL)
QN03	4822 130 42951	Transistor 2SA970(GR, BL)
QN04	4822 290 83312	IC TA7317P
Q701	4822 130 42951	Transistor 2SA970(GR, BL)
Q702	4822 130 42951	Transistor 2SA970(GR, BL)
Q703	4822 130 43233	Transistor 2SC2240(GR, BL)
Q704	4822 130 43233	Transistor 2SC2240(GR, BL)
Q705	4822 209 83732	IC AN7062P
Q751	4822 130 60526	Transistor 2SD1508
Q752	4822 130 60526	Transistor 2SD1508
Q757	4822 130 60696	Transistor 2SC1627(O, Y)
Q758	4822 130 60696	Transistor 2SC1627(O, Y)
Q759	4822 130 69693	Transistor 2SA817(O, Y)

REF. DESIG.	PART NO.	DESCRIPTION
Q760	4822 130 60693	Transistor 2SA817(O, Y)
▲ Q761	4822 130 60697	Transistor 2SC3180N(R, O) /01B/02B/05B/07B
▲ Q761	4822 130 43305	Transistor 2SC3181(R, O) /10B/12B/15B/17B
▲ Q762	4822 130 60697	Transistor 2SC3180N(R, O) /01B/02B/05B/07B
▲ Q762	4822 130 43305	Transistor 2SC3181(R, O) /10B/12B/15B/17B
▲ Q763	4822 130 60694	Transistor 2SA1263N(R, O) /01B/02B/05B/07B
▲ Q763	4822 130 43018	Transistor 2SA1264(R, O) /10B/12B/15B/17B
▲ Q764	4822 130 60694	Transistor 2SA1263N(R, O) /01B/02B/05B/07B
▲ Q764	4822 130 43018	Transistor 2SA1264(R, O) /10B/12B/15B/17B
Q801	4822 130 61179	Transistor 2SD2037(E, F)
Q802	4822 130 61176	Transistor 2SB1357(E, F)
		P701-MISCELLANEOUS
JW51	4822 290 81363	Terminal, Speaker /01B/05B/07B
	4822 290 81373	Terminal, Speaker /02B
	4822 290 60837	Terminal, Speaker /10B/15B/17B
	4822 290 60841	Terminal, Speaker /12B
JW52	4822 290 81364	Terminal, Speaker /01B/05B/07B
	4822 290 81373	Terminal, Speaker /02B
	4822 290 60836	Terminal, Speaker /10B/15B/17B
	4822 290 60839	Terminal, Speaker /12B
LN01	4822 280 20197	Relay, DH2SU
L751	4822 157 51739	Coil, Speaker
L752	4822 157 51739	Coil, Speaker
		P901-POWER SWITCH CIRCUIT BOARD
▲ F902	4822 070 31002	Fuse 1A 250V /02B/05B/07B/10B/12B/15B/17B
▲ G901	4822 121 43732	Film Cap. 0.01μF ±20% /01B/02B/07B/10B/12B/17B
▲ G902	4822 122 33276	Ceramic Cap. 0.01μF ±20% /05B/15B
▲ J903	4822 264 30313	Jack, AC Outlet /01B
▲ S901	4822 276 11654	Push Switch, Power

NOTE ON SAFETY:
Symbol ▲ Fire or electrical shock hazard. Only original parts should be used to replace any part marked with symbol ▲ . Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.